

# Unity Stand-Alone Rectifier Module

**Models:**    **USAR48-3:** 48 Volt, 3 Amp Rectifier  
              **USAR24-6:** 24 Volt, 6 Amp Rectifier

## INSTALLATION / OPERATION MANUAL

### I) OVERVIEW

The Unity Stand-Alone Rectifier Module (USAR) provides up to 150 watts of DC power at 48 volts-3 amps or 24 volts-6 amps (depending on model). It has been designed with a uniquely flexible mounting system to accommodate a wide range of installation requirements; rack rail/ cabinet mount, or desk/shelf or wall mount.

Front panel test points and voltage adjustment pot are provided for fine-tuning output to the requirements of sensitive loads.

Form C status contacts enable remote alarms for the rectifier. A front panel LED provides several different diagnostic indications ( see section III).

The USAR can also be attached to a back-up battery, without requiring modification, to produce a DC UPS system.

### II) INSTALLATION

#### A) Mounting

The USAR is shipped from the factory with:

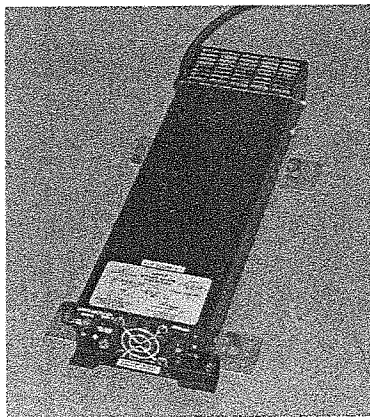
4 ea. 1 RU mounting brackets

12 ea. 6-32 stainless steel bracket attachment screws

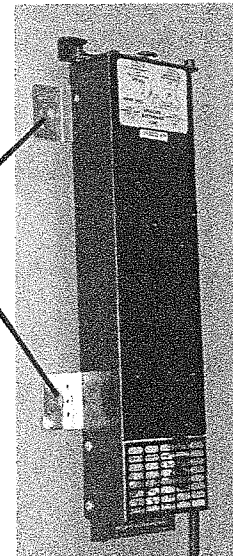
If the unit will be attached to a rack rail, the installer must provide either two or four (depending on desired mounting configuration) 12-24 x 1/2" standard rack mounting screws. If it is to be desk/shelf or wall mounted, the installer must provide 4 ea. mounting screws up to 1/4" appropriate for the particular surface.

The USAR is forced air cooled with air exiting the top rear, so it should not be mounted where the free flow of air through the unit may be obstructed.

#### 1) Desk, Shelf or Wall Mounting



Use 1/4" untapped mounting holes to attach to wall or shelf



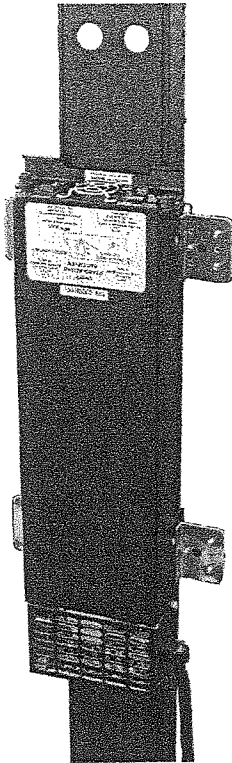
M-USAR  
As of 091814

P.O. Box 1306  
Newport Beach,  
California 92663

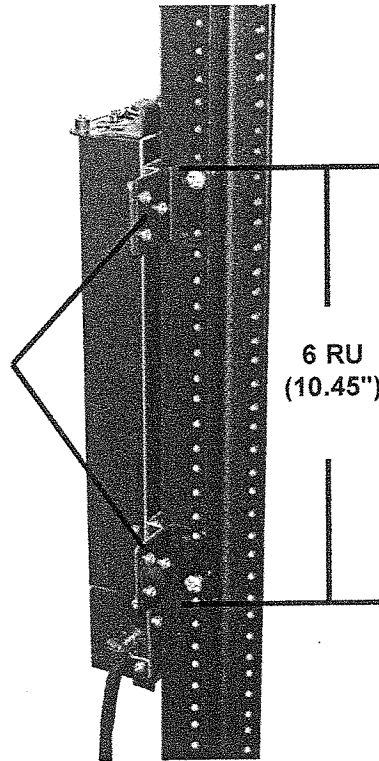
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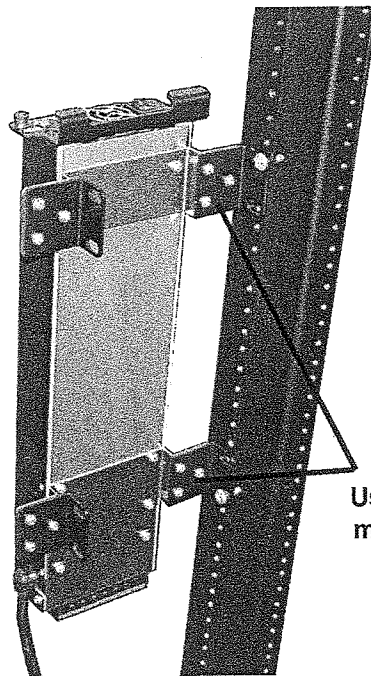
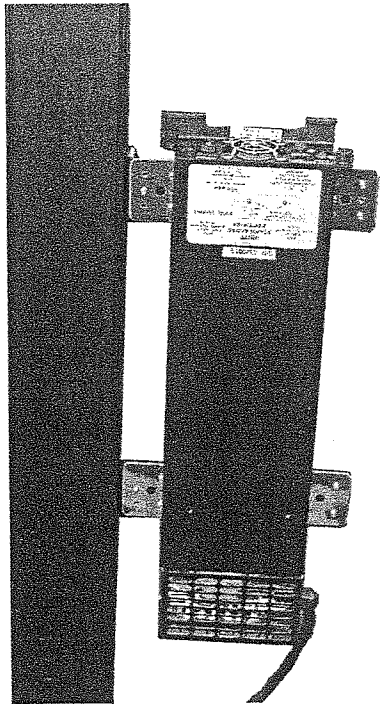
**2) Side Rail Mount (3" Rails Only): Four Point Attachment, Inside or Outside of Rail**



Use provided black mounting brackets to attach to rail



**3) Parallel Rail Mount: Two Point Attachment: Front or Rear of Rail**



Use provided black mounting brackets to attach to rail

## B) Universal AC Input

The USAR accepts 85-264 VAC, 47-63 Hz input. No input switch resetting or jumper reconfiguration is needed for either 115 or 230 VAC applications. The unit is provided with a 7.5' power cord with plug suitable for a standard 115 VAC 15 amp outlet. If plug replacement is required for a 230 VAC outlet, observe color coding as follows:

	<u>115 VAC</u>	<u>*230 VAC (North American)</u>
Black.....	AC Hot (fused inside the rectifier)	AC Hot (fused inside the rectifier)
White.....	AC Neutral.....	AC Hot
Green.....	AC Ground (safety, earth).....	AC Ground (safety, earth)

*\*230 VAC Application Note: When the rectifier is powered by 230 VAC consisting of two hot legs (line-to-line) they should both be over-current protected using a double pole circuit breaker.*

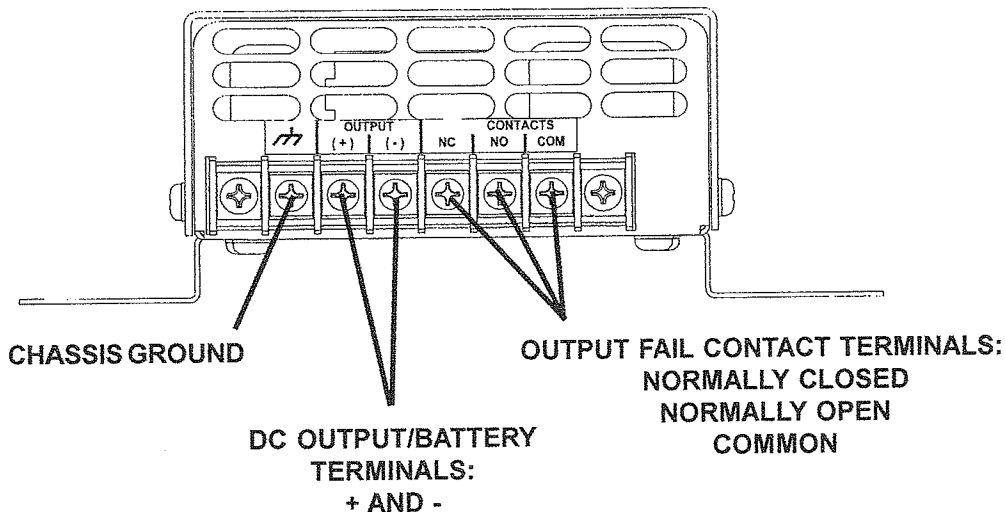
## C) DC Output/Battery Connection Points

*The USAR may be used as a stand-alone power source or it can be wired to a battery.*

*Note: Refer to the USAR Rear Panel Diagram below for wiring DC Output/Battery connections, as well as alarm wiring. (Note: The clear cover on the terminal strip is simply snapped on and off for access.) The output terminals are screw-capture type. Loosen the terminal screw, strip wires approximately 1/4", insert and tighten.*

Minimum Wire Size per N.E.C.: 18 AWG

### USAR Rear Panel Diagram

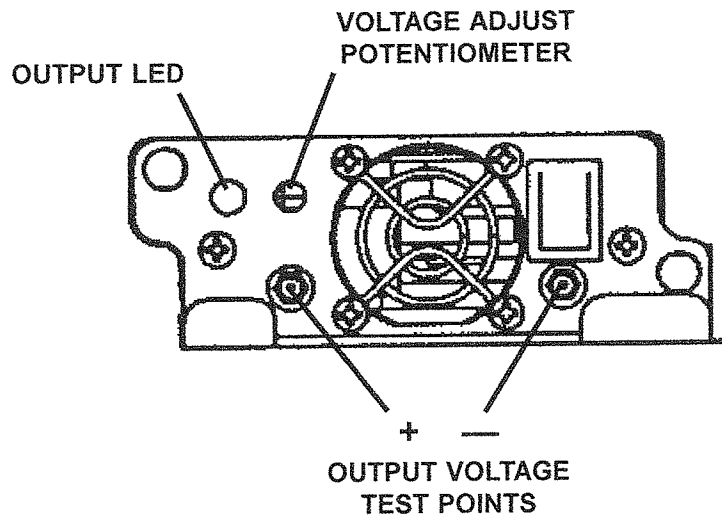


If wiring to a battery, the ungrounded battery connection must be fused.

Note: The USAR employs an internal oring diode to isolate and protect it from a battery or parallel charging source.

### III) RECTIFIER OPERATION

#### USAR Front Panel Diagram



#### A) Output Indications

The output LED on the rectifier front panel indicates status as follows:

Green = OUTPUT VOLTAGE PRESENT

Red = OUTPUT VOLTAGE NOT PRESENT

*Note:* The red failure-indicating LED requires power from a battery wired to the output terminals. If battery is not attached, this LED will be extinguished in the event of failure.

No LED (Fan Running) = SEVERE OVERLOAD

Unit is in current limit. This circuit is self resetting as soon as the overload is sufficiently reduced.

No LED (Fan Not Running) = NO AC INPUT to the rectifier, and no battery connected to the output. If extinguished, check to ensure that the power switch is on and AC is being supplied.

#### B) Protection Circuit Operation: Shutdown Conditions

Over-Temperature Shutdown: Auto reset once unit has cooled sufficiently

Over Voltage Shutdown: Latching circuit; turn AC input off for 1-2 seconds to reset

#### C) Output Voltage Adjustment

The factory output voltage settings and user adjustment range are as follows:

	<u>Factory Setting</u>	<u>Adjustment Range</u>
USAR48-3:	54.4 VDC	47.7 - 59.5 VDC
USAR24-6:	27.2 VDC	23.5 - 29.5 VDC

Front panel test points are provided for calibrating output voltage with an external voltmeter. Adjustment is made at the front panel potentiometer with a small flat tip screwdriver.

#### IV) ALARM CONTACTS

Form C alarm contacts are provided for the rectifier on the black terminal strip on the rear of the USAR (see Rear Panel Diagram). The alarm will be activated by any condition which causes a loss of rectifier output. For instance, if the internal fan fails and the resultant high temperature causes the thermal switch to shut the rectifier off, the alarm will be activated. Exception: when rectifier is in current limit mode.

A label behind the terminal strip identifies the "C" (Common), "NO", (Normally Open) and "NC" (Normally Closed) contact positions. *Note: "NORMAL" condition is when there is output voltage present.*

#### V) SPECIFICATIONS

**Input Voltage/Frequency:** 85-264 VAC\* / 47-63 Hz.

**Input Amperage:** 2.2 amps @ 115V and full load, 1.1 amps @ 230V and full load

**Power Factor:** .96-.98

**Output Voltage/Amperage\*:**

**USAR48-3:** -54.4 VDC, adjustable 47.7 - 59.5 VDC / 3 amps continuous

**USAR24-6:** +27.2 VDC, adjustable 23.5 - 29.5 VDC / 6 amps continuous

\* 100 % output power available from 105 VAC to 264 VAC;

Derate output linearly from 100% @ 105 VAC to 80 % @ 85 VAC

**Regulation:** +/- 2 %

**Ripple:** USAR-24-6: 150 mV P-P

USAR-48-3: 250 mV P-P

**Protection:** Over-voltage, current limiting, over-temperature, internal input/output fuses

**Alarms/Indicators:**

Output failure contacts; Form C

Front panel LED indications: "DC OK/DC FAIL", Overload

Front panel voltage test points and adjustment

**Operating Temperature:** -10°C to +60°C; 100 % load to +50°C;

Derate linearly to 80 % load @ 60°C

**Current Draw on Battery when Unit is Not Operating (to illuminate "FAIL" LED):** <10 mA

**Dimensions:** Refer to Dimensional Drawings on the following page

**Weight:** 1.9 lbs.

**Designed to:**

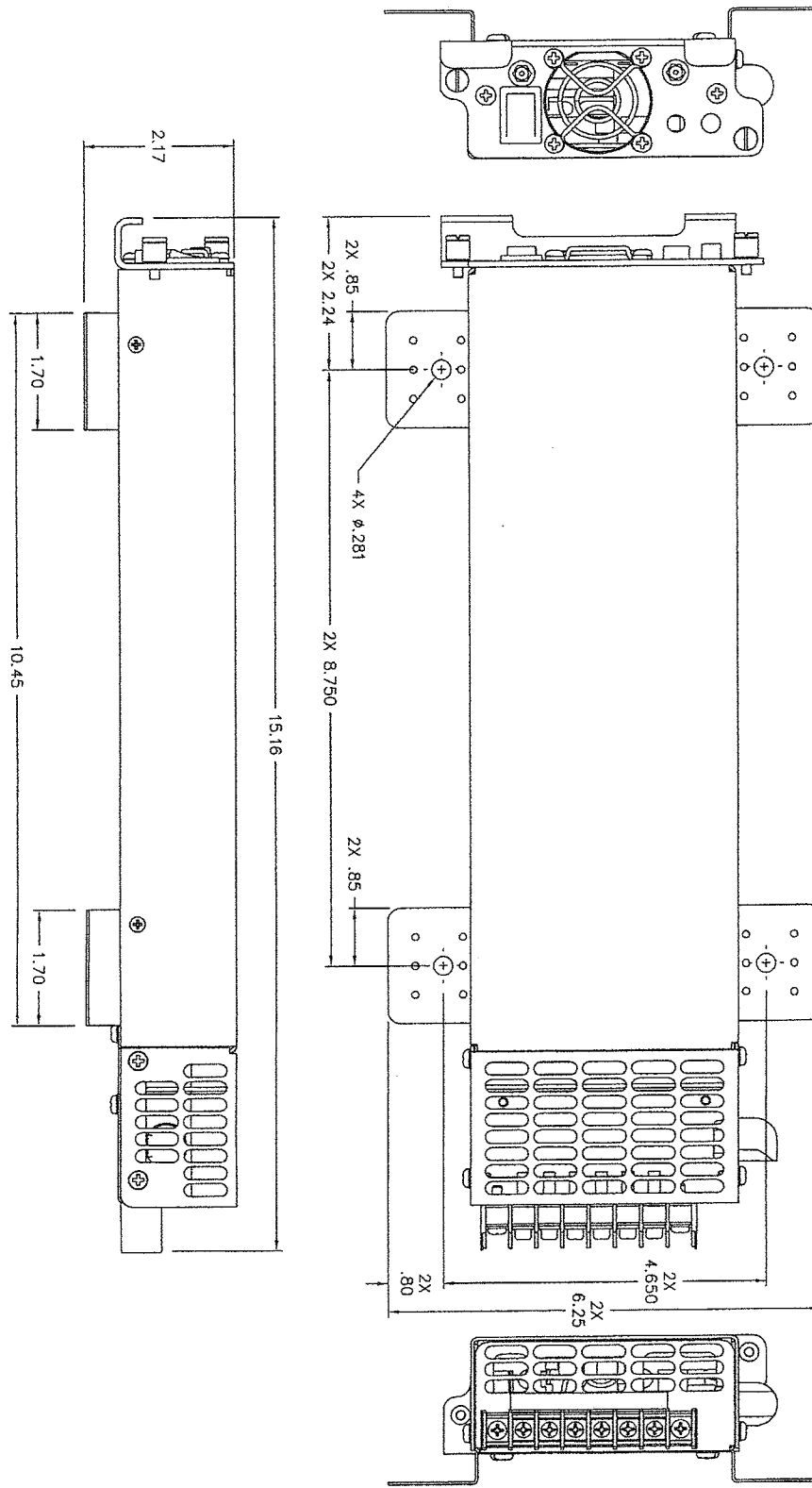
EN55022 Class B

EN61000-4-2,3,4,5,6,8,11

EN61000-3-2,3

UL 1950

VI) DIMENSIONAL DIAGRAMS



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